

CLAIMS

1. A dose indicator for a fluid dispenser device, said indicator comprising:
  - a body (4);
  - 5       • an actuator (1) that is mounted to turn relative to said body (4) about a first axis, and including drive means (14, 15); and
  - 10      • a cylindrical indicator element (2) that is mounted to turn relative to said body (4) about a second axis and including a set of teeth (21) that co-operate with said drive means (14, 15) of said actuator (1) so as to turn each time the dispenser device is actuated, said indicator element (2) further including numeric and/or symbolic indicator means (25) so as to indicate to the 15 user the number of doses that have been dispensed or that remain to be dispensed from said dispenser device;
  - 15      • said actuator (1) co-operating with actuator means (7) secured to said body (4), said actuator means (7) being displaced in translation each time the dispenser device is actuated, and co-operating with said actuator (1) so as to transform the translation of said actuator means (7) into said actuator (1) turning,
    - 20        said indicator being characterized in that
    - 25        • one amongst the actuator (1) and the actuator means (7) includes at least one actuator member (8) that is partially oblique relative to the direction of displacement in translation of said actuator means (7), said at least one actuator member (8) co-operating with at least one complementary actuator member (17) provided 30 on the other one amongst the actuator (1) and the actuator means (7), so that a displacement in translation of the actuator means (7) is transformed into said actuator (1) turning,
    - 35        • and in that said actuator member (8) comprises an oblique portion that enables the dose to be counted, and a rectilinear portion disposed after said oblique portion in the actuation direction of said actuator means (7),

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said rectilinear portion enabling the actuation stroke of the device to be continued after the dose has been counted.

- 5 2. An indicator according to claim 1, in which said indicator element (2) is disposed around said actuator (1), said set of teeth (21) being formed on the inside peripheral wall of said indicator element (2).
- 10 3. An indicator according to claim 1 or claim 2, in which said first and second axes are identical.
- 15 4. An indicator according to any preceding claim, in which a cover element (3), secured to said body (4), is disposed around said indicator element (2), said cover element (3) including a window (24) in order to see said indicator means (25) of said indicator element (2).
- 20 5. An indicator according to claim 4, in which one amongst the indicator element (2) and the cover element (3) includes guide means (22) that co-operate with complementary guide means (23) provided on the other element (3, 2).
- 25 6. An indicator according to claim 5, in which said guide means (22) comprise at least one guide groove (22), and said complementary guide means comprise at least one guide projection (23).
- 30 7. An indicator according to claim 6, in which said guide groove (22), which may in particular be helical, winds around said indicator element (2) in a plurality of turns, or alternatively around said cover element (3), enabling the indicator to count a number of doses that is greater than the number of teeth provided in the set of teeth (21) of the indicator element (2).

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8. An indicator according to any preceding claim, in which said oblique portion is provided at the start of the actuation stroke of the device.

5 9. An indicator according to any preceding claim, in which said at least one actuator member (8) is an actuator groove (8), and said at least one complementary actuator member (17) is an actuator projection (17).

10 10. An indicator according to any preceding claim, in which said drive means (14, 15) of the actuator comprise a flexible tab (15) supporting a drive projection (14) that co-operates with the teeth of the set of teeth (21) of the indicator element (2).

15 11. An indicator according to claim 10, in which said flexible tab (15) comprises a first flexible tab portion (15a), and a second flexible tab portion (15b), the first flexible tab portion (15a) supporting the drive projection (14), and the second flexible tab portion (15b) connecting said first flexible tab (15a) to said actuator (1).

20 12. An indicator according to claim 11, in which, in order to ensure a count at each actuation, and in order to compensate for manufacturing tolerances, the angle through which the actuator (1) turns is greater than the angle defined by a tooth in the set of teeth (21) of the indicator element (2), the body (4) including abutment means (13) to prevent the indicator element (2) from turning through more than one tooth in the set of teeth (21), the additional amount through which the actuator (1) turns being compensated by the second flexible-tab portion (15b) of the drive means (14, 15) flexing.

25 30 35 13. An indicator according to any preceding claim, in which said body (4) includes a wall portion (4) that is

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cylindrical, at least in part, and that is disposed between said actuator (1) and said indicator element (2), said wall portion having a cut-out (40) forming a passage for passing the drive means (14, 15) of the actuator (1)

5 to the set of teeth (21) of the indicator element (2).

14. An indicator according to claim 12 and claim 13, in which an edge (13) of said cut-out (40) forms said abutment means (13).

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15. An indicator according to claim 12 or claim 13, in which said body (4) includes anti-return means (11, 12) for the indicator element (2), said anti-return means preventing said element from turning in the direction opposite to the direction imparted thereto by the actuator (1).

16. An indicator according to claim 15, in which said anti-return means (11, 12) comprises a flexible tab (11) 20 including an anti-return projection (12) that co-operates with said set of teeth (21).

17. An indicator according to any preceding claim, in which resilient means (18) are provided so as to urge 25 said actuator (1) towards its rest position while the actuator means (7) are returning to their rest position.

18. An indicator according to claim 17, in which said resilient means (18) comprise at least one resilient 30 blade (18) that is secured to said actuator (1), said at least one resilient blade (18) being elastically deformed while the device is being actuated.

19. A fluid dispenser device comprising: a reservoir 35 (100) containing the fluid; a dispenser member (200), such as a pump or a valve; and a dispenser head (6) incorporating a dispenser orifice, said device being

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characterized in that it further comprises a dose indicator according to any preceding claim.

20. A device according to claim 19, in which the body (4) 5 is a portion of said head (6), said actuator means (7) being secured to said head (6).

21. A device according to claim 19 or claim 20, in which said actuator means (7) are formed on an insert (5) that 10 is inserted into said head (6) upstream from said dispenser orifice.

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